# Abortion

## classification and techniques


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INTERNATIONAL PLANNED PARENTHOOD FEDERATION

# ABORTION

## CLASSIFICATION AND TECHNIQUES

*Edited for the IPPF Central Medical Committee*

*by*

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When the *IPPF Medical Handbook* was revised in 1968, the section on abortion gave only a brief outline of the subject. Realizing that this section did not deal adequately with the rapid advances taking place in surgical techniques of terminating pregnancy, the IPPF Panel of Experts on Abortion requested the preparation of a document based on a chapter in the *IPPF Medical Handbook* dealing with the various types of abortion, but concentrating on techniques of termination. This volume is a companion to the IPPF publications on systemic and intrauterine contraception and on vasectomy, which are also revisions of individual chapters of the *IPPF Medical Handbook*.

## CONTENTS

## INTRODUCTION

Induced abortion is a global problem of epidemic proportions, and deaths from illegal, unskilled abortion play a considerable role in the maternal mortality patterns of many countries. In most countries which are undergoing rapid urbanization and some degree of economic development, the incidence of abortion is increasing. Most abortions take place as a result of a couple's desire to space or limit their children in certain social and economic situations. Many (but never all) induced abortions can be eliminated by the use of contraception or sterilization.

Member Associations of the IPPF have adopted different policies towards this complicated subject and their attitude towards abortion will be governed by these policies. However, if a decision to terminate a pregnancy is taken and is legally and culturally acceptable, then it is important that the termination is done as safely and simply as possible

Induced abortion, performed by trained surgeons, is legal in nearly every country if there is medical evidence that continuation of the pregnancy would seriously endanger the mother's life. The treatment of such women, who are often assessed relatively late in pregnancy, is often one of considerable complexity and is not discussed in this booklet. However, slightly over half the world's population now live in countries where abortion is legal on a wide range of social and medical grounds, and in some places the law on abortion has been repealed altogether.

When abortion is performed early in pregnancy on a healthy woman, it can be a relatively simple operation with a low mortality, and this booklet is partly devoted to a consideration of this situation. Currently, important innovations in technique are taking place. Several procedures have been developed and used successfully in many thousands of cases. However, evaluation—particularly between various forms of vacuum aspiration—is still incomplete and, unless specifically mentioned, no attempt has been made to compare methods. It should also be noted that certain possible long-term side-effects of induced abortion are still poorly understood. In this booklet we have not discussed the prostaglandins, whose use in abortion is being vigorously studied at present, because they are still under clinical trial and are not yet generally available. Reference is, however, made to them in the bibliography.

It is hoped that this booklet will provide a useful and practical background for those involved in abortion techniques, but it is not intended to stand by itself and can never replace practical instruction gained in the company of experienced doctors.

Thanks are due to Prof. B. M. Beric, Dr B. Branch, Dr R. Soonawala, Mr H. Francis, Dr D. M. Potts, and all those who have helped to prepare and to comment on the text of this booklet.

## CLASSIFICATION

### Definitions of abortion

Abortion is the expulsion or removal of the products of conception from the uterus before the 28th week of pregnancy, this being the time when the fetus is generally considered to be viable.

Spontaneous abortion occurs as the result of a variety of endogenous and exogenous causes, excluding intentional human interference. Faulty development or implantation of the embryo is probably the commonest cause of spontaneous abortion.

Induced abortion is the deliberate termination of a pregnancy, either legally or illegally. The methods vary greatly

### Clinical varieties of abortion

#### THREATENED ABORTION

At this stage of abortion, bleeding from the uterus and pain are slight, and the pregnancy will probably continue in most cases.

#### INEVITABLE ABORTION

When cervical dilatation has obviously started and can be felt on examination, the abortion cannot be prevented by any treatment and is called inevitable. If all the uterine contents are expelled, sometimes intact, the abortion is complete. Frequently placental tissue is retained (and may cause continued haemorrhage); in this case the abortion is incomplete and curettage or aspiration may be needed to evacuate the remaining products of conception.

#### FEBRILE ABORTION

If there is evidence of uterine infection, especially if the temperature is raised at least 1°C (more common in unskilled, illegal abortion), an appropriate antibiotic in adequate dosage should be given. A cervical swab should be taken for bacteriological culture and antibiotic sensitivity. The uterus should be surgically evacuated.

#### SEPTIC ABORTION

Septic abortion refers to cases where the infection has spread beyond the uterine cavity. If the woman is gravely ill, treatment of the infection (and if necessary blood transfusion) will be required before surgical evacuation of the uterus is undertaken.

### HABITUAL ABORTION

Occasionally a patient will spontaneously abort three or more successive pregnancies, usually at the same time after conception. This is called habitual abortion and needs thorough investigation for an underlying cause.

### MISSED ABORTION

Occasionally the fetus may die without being expelled from the uterus, and the products of conception may be retained for several weeks. This is a missed abortion. Progress may be complicated by afibrinogenaemia.

## Treatment of incomplete abortion

Any retained products of conception trapped in the cervix should be gently removed with sponge forceps. Ergometrine, 0·5 mg intravenously, or synthetic oxytocin, 2–5 units intramuscularly, is given to control bleeding, while arrangements are made to admit the patient to hospital. If the patient is shocked, intravenous fluid and, if necessary, blood should be given. Antibiotics are administered if there is evidence of genital tract infection Clostridial and Gram-negative infections, or cases where the uterus has been syringed with corrosive chemicals by an unskilled operator, require extremely close clinical supervision and early, sometimes radical, surgical intervention.

In many cases the cervix is partially open. Vacuum aspiration may represent the most effective and safest way of evacuating an incomplete abortion, whether septic or not. Alternatively, the uterine cavity can be explored gently and adherent placental fragments carefully removed with sponge forceps. A curette may be used to assure complete evacuation of the uterine cavity.

The soft pregnant uterus is easily perforated and the cervix easily torn. Care should be taken, therefore, if pointed instruments are introduced into the uterine cavity, or when a toothed volsellum rather than a ring forceps is applied to the cervix. If necessary, at the end of the operation a further dose of an oxytocic may be given to ensure that the uterus remains firmly contracted.

## TECHNIQUES

Termination of pregnancy can be performed in a number of different ways. The duration of the pregnancy is of the utmost importance, and termination under 12 weeks from the first day of the last menstrual period* is surgically, administratively and emotionally a very different operation from that in the second trimester. It is useful to divide women having terminations into two groups: (*a*) a *low-risk group* which includes healthy women up to 12 weeks, and (*b*) a *high-risk group* which includes all later terminations and those early terminations which are performed in ill patients with medical indications for abortion.

If a legal abortion is to be performed, everything possible must be done to ensure that women seek help early in pregnancy, and an effort must be made to see that the abortion takes place within a few days of the decision to terminate the pregnancy. It should be recognized that, in order to achieve this goal, the professional personnel involved must retain a sympathetic attitude towards women seeking termination of pregnancy. Also, under liberal laws, it is likely that relatively large numbers of operations will be performed. Conversely, while recognizing the occasional necessity to undertake terminations later in pregnancy and welcoming the freedom which some laws and draft laws allow in this respect, it is felt very strongly that terminations of pregnancies over 12 weeks should be more limited, as second trimester terminations may involve morbidity and mortality greater than that for full-term delivery. For example, if at any time medical services cannot deal with all legally acceptable requests, then more advanced pregnancies should be refused before the earlier ones.

It is to be remembered that nearly all abortion laws permit a doctor to undertake abortion within a certain framework; they are not obligatory. The doctor and his assistants have the most important role in interpreting the law and must always endeavour to help the woman (or couple) to make the decision that is most likely to be in the interest of her health and the health of her family. It is of primary importance that all engaged in the difficult problem of termination recognize that their role is one of service, and that it is their role to provide sympathetic, safe, expeditious and economical pregnancy-counselling services without morally biased attitudes.

### Low-risk pregnancies

A clinical history should be taken, a pelvic examination performed, and future family planning methods discussed. Whatever technique is used it is of paramount importance that the procedure is clearly explained to the woman so that she understands what is going to take place.

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*Throughout, when the length of gestation is mentioned in weeks, these are counted from the first day of the last menstrual period and not from the date of conception. The two weeks or so difference in the length of the pregnancy may be of great importance in deciding on the best method of termination.

Termination can be performed under local, spinal or general anaesthesia. Before eight weeks, vacuum aspiration can be carried out without cervical dilatation and therefore without any anaesthetic at all, but with the help of positive and active counselling. Even if dilatation is unnecessary, paracervical block considerably lessens pain from post-evacuation uterine contraction. Routine pre-medication is not required in women not receiving a general anaesthetic, but for the very anxious patient 5–7·5 mg of intravenous diazepam (Valium) or other tranquillizer may be useful.

Local anaesthesia is usually preferred. When a general anaesthetic is given, a trained anaesthetist should be present, and the immediate availability of resuscitation equipment including oxygen and facilities for tracheal intubation are mandatory. Anaesthetics such as halothane (Fluothane) and trichloroethylene (Trilene), which relax the uterus, should be avoided.

Local anaesthesia can be carried out by paracervical block. There are various schemes of giving these injections, using two or more injection sites. The essential

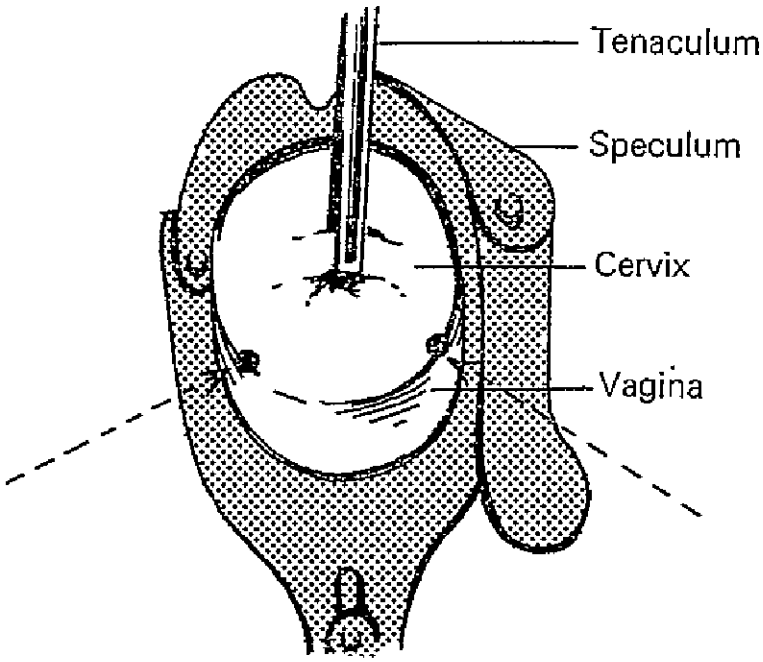


*Fig. 1.* Diagram to show injection sites for paracervical block, at reflexed vaginal epithelium at the junction of the cervix and vagina. Note the tenaculum gripping the anterior lip of the external os. Here the injection sites shown are at 4 and 8 o'clock positions around the cervix (arrows), but there are several other sets of positions for the block (see text).

point is that the injection should be made through the reflexed vaginal epithelium at the junction of the cervix and vagina, as shown in Fig. 1. One pattern of injection which gives adequate results is to use a total of 10 ml of 1% lignocaine in four equal doses at 1 cm depth, at 2, 4, 8 and 10 o'clock positions around the cervix. The syringe plunger should be withdrawn at each injection to avoid the

possibility of intravascular injection. Other schemes of administration are to use 1% lignocaine or sometimes 2% in half the volume, in three sites at 12, 4 and 8 o'clock positions or, as in Fig. 1, in two positions at 4 and 8 o'clock.

### OPERATIVE PROCEDURE

Gonorrhoeal infections or acute cervicitis, with a purulent discharge, should be treated before the operation, which will have to be postponed until such time as the infection is cleared.

After passing urine, the patient should be in the dorsal lithotomy position. Catheterization before the operation is unnecessary. The perineum does not need to be shaved. It should be clearly realized that it is impossible to clean the cervical canal adequately, and the normal flora that are present will be introduced into the uterine cavity. Classical sterile-field aseptic technique is therefore inapplicable; 'no-touch' technique may be more effective in preventing transfer of potentially pathogenic organisms. Bimanual pelvic examination (using a non-sterile examining glove) should always be carried out. The operator must not touch the cervix with, nor introduce into the uterus, any portion of an instrument that has had previous contact with any non-sterile object. It is a good general rule to try to ensure that the same instrument does not enter the uterus twice. Some experienced surgeons who observe these procedures scrupulously, find it is not necessary to wear sterile gloves or to drape the patient with a sterile towel. Details of the actual operating procedure can only be worked out taking into account local conditions and individual surgeons' techniques.

Although seldom necessary, a long-acting oxytocic, such as 0·25–0·5 mg of ergometrine, may be given intramuscularly after dilatation and before curettage or vacuum aspiration. Alternatively, ergometrine, 0·5 mg, or oxytocin, 5 units, can be given intramuscularly before dilatation.

### DILATATION

The operator must be certain of the size, shape and position of the uterus by bimanual pelvic examination. Many surgeons find the cervix is best exposed by using a large, short-bladed, domed bivalve speculum (warmed to body temperature). The cervix is best immobilized with a single-toothed tenaculum applied vertically to the anterior lip of the cervix with the lower point inside the os (Fig. 1). Some surgeons, however, use a sponge-holding forceps to grasp the cervix.

A uterine sound should be passed to check the direction of the cervical canal and to determine the depth of the uterus. The depth in centimetres should approximate to the duration of the pregnancy in weeks since the last menstrual period. The cervix should be dilated to a size to accommodate the cannula to be used for evacuation. The choice of size of cannula is determined by the duration of gestation: e.g. 8 weeks = 8 cm uterine depth = 8 mm cannula; 10 weeks = 10 cm depth = 10 mm cannula. If cervical dilatation is extremely difficult, a cannula 1 or 2 mm smaller may be used, but the need for forceps and curette will be increased. (Only dilators up to 12 mm diameter need be in the set on the

instrument tray, but larger sizes should be available, already sterilized if necessary). It is important to remember that damage to the cervix may endanger future pregnancies. In order to avoid cervical tearing, care should be taken to ensure the cervix is properly immobilized, and that dilatation is done systematically and unhurriedly. Pratt or Hawkin Ambler dilators are preferred to other varieties, since they dilate the internal cervical os more gently. Also, Hawkin Ambler dilators are single-ended, avoiding an added risk of contamination.

Dilatation should be undertaken gently, with steady movements on inserting and withdrawing the dilator. It should always be remembered that the internal cervical os, not the external, is the barrier to dilatation. At the same time, it is not necessary to pass the dilator far beyond the internal os, and it should not go as far as the sound did. The dilator should be 'palmed' and not held like a pencil.

## EMPTYING THE UTERUS

### *Curettage*

Following cervical dilatation, a curette, ovum forceps or sponge-holding forceps is passed through the cervix. The membranes are ruptured, and some part of the conceptus is removed to induce uterine contraction. Up to 10 weeks, initial curettage is probably preferable, followed by the use of forceps to remove detached placental tissue and fetal parts. In later pregnancies, the forceps may be used first in order to extract the fetus and parts of the placenta. When no more large pieces of material can be removed, the uterine cavity is curetted carefully.

It is sometimes taught that a blunt curette is preferable because it is thought to reduce the risk of perforation. However, if perforation occurs, it usually happens during the introduction of an instrument into the uterus and not on the return or withdrawal stroke of the curette. Therefore, a sharp curette is often preferred (Fig. 2), since it is more sensitive and efficient than a blunt one and may be safer because less force is required to separate attached placental material.

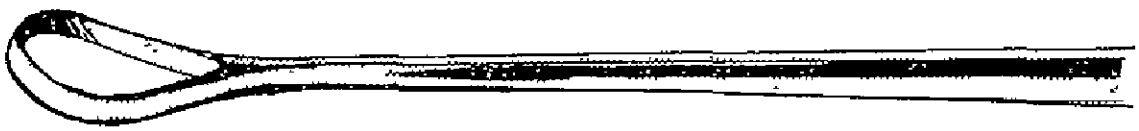

*Fig. 2.* Sharp uterine curette (actual size).

On completion of the operation, bimanual palpation is essential. When the uterus is empty the tone should be firm and bleeding slight. A poorly contracted uterus or persistent bleeding should suggest incomplete emptying and curettage should be repeated.

*Vacuum evacuation*

Vacuum aspiration is a quick efficient method of emptying a pregnant uterus up to 12 weeks. It is now the most commonly used method in the USA and parts of eastern Europe and is being increasingly used in the UK, although it remains little known in some other countries.

A number of different vacuum aspiration pumps are available. Experiments are proceeding on simple manually operated pumps and it has been found in many areas that an early termination can be performed with a large syringe and a suitably small cannula. Equipment to meet the requirements of frequent operations should be sturdily built, have an enclosed motor correctly insulated for operating room use (if intended) and easy-to-clean, changeable collecting bottles. The pump should be capable of consistent delivery of negative pressure of not less than 600 mm (25 inches) of mercury. Anything less is incompatible with the proper use of the vacuum aspiration technique. It is important to ensure that the pump is constructed to 'suck' and not to 'blow'. Fatal air embolism has occurred when this precaution has been omitted, and the negative pressure at the curette end should always be tested before operation.

Many different cannulas have been invented. They range in outside diameter from 4 to 6 mm up to 10 or 12 mm. Usually the tip is slightly angled (Fig. 3)

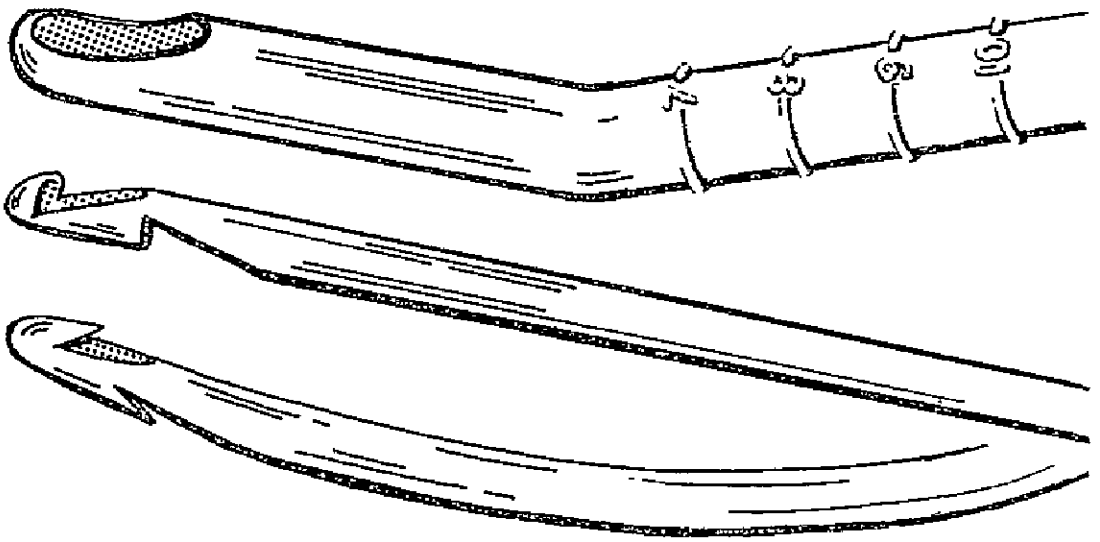

*Fig. 3.* Three cannulas for vacuum aspiration (actual size). The top one is a non-flexible cannula for normal vacuum aspiration following cervical dilatation; the two lower ones are flexible cannulas for early pregnancies and do not need cervical dilatation.

The hole may be placed terminally or sub-terminally. It is thought that if the hole opens on the convex surface of the angle it is least traumatic. Most cannulas are made out of metal and can be sterilized by autoclaving, but plastic cannulas are also available. These may be disposable and pre-sterilized, stored in antiseptic solutions, or gas sterilized. Some cannulas have an opening for finger-tip control of the vacuum at the base of the tube.

Transparent cannulas allow the products of conception to be identified quickly, but have thicker walls than metal ones. When a series of vacuum aspirations is performed, it is useful to cleanse the connecting tube by dipping the used cannula in water after each operation. This should be done while the pump is still running and before disconnecting the used cannula. A combined cannula and glass receptacle, which are linked together and held in the operator's hand, has been devised. This combined instrument has the advantage that it can be used with sources of suction which are commonly available in operating theatres. It is easy to clean and sterilize.

There are two main patterns of vacuum aspiration according to the type of cannula used:

*Non-flexible metal or plastic cannula requiring cervical dilatation.* For rapid aspiration with little blood loss the outside diameter of the cannula in millimetres should correspond to the duration of the pregnancy in weeks, which also approximates to the uterine depth measured in centimetres. When the vacuum is switched on, the cannula is moved inwards and outwards in the direction of

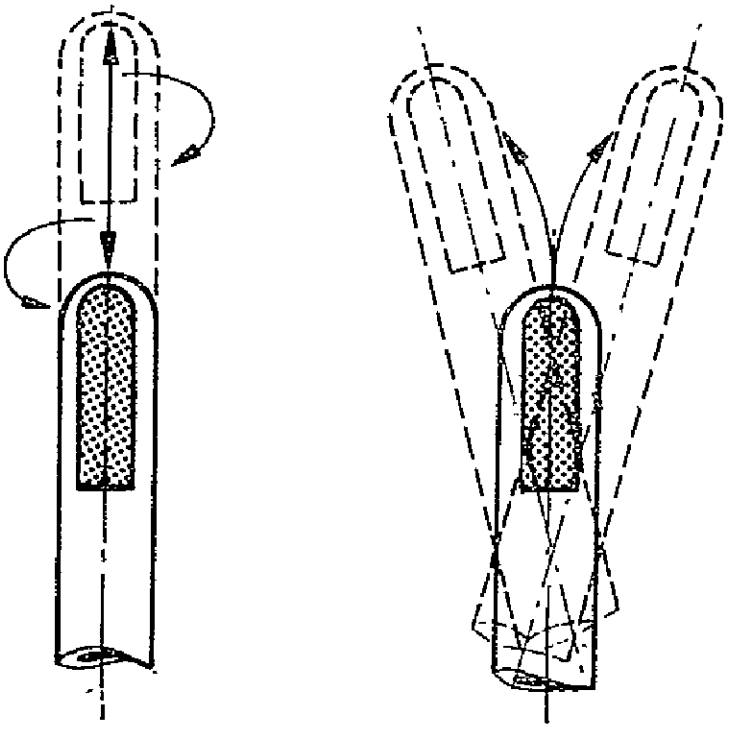

*Fig. 4.* Correct (left) and incorrect (right) manner of rotation of tip of vacuum aspiration cannula.

the uterine axis and rotated about its own axis (Fig. 4). The negative pressure dislodges all the products of conception. The motion of the tip helps to pick up the tissue. Aspiration is continued until the uterine wall can be felt all round and the uterus proved to be empty. It should be noted that aspiration is unlike

curettage and the cannula is not manipulated in the same way as a curette—'scraping' is not indicated.

*The 6 mm flexible plastic cannula (Karman cannula).* Small flexible cannulas with a double opening on either side near the tip and with an outside diameter of only 6 mm are now available and are currently being evaluated (Fig. 3). They can be used to empty the uterus up to eight weeks from the start of the last menstrual period and, being not much larger than an IUD inserter, can be passed through the undilated cervix without using a paracervical block. The cannula should be inserted slowly through the cervical canal with a barely noticeable twisting motion and advanced gently in the direction of the uterine fundus until the slight curve of the instrument matches that of the uterus. The cannula is then employed as a sound, again noting the uterine depth. When the tip has reached the fundus of the uterus or meets the moderate resistance of the sac, the cannula should be attached to the suction tubing and negative pressure allowed to develop to the capacity of the unit, not less than 600 mm of mercury. Then the tip of the cannula should be rotated one-quarter of a turn (90°) in each direction in the frontal plane of the fundus for approximately 60 seconds. Usually the first aspirated material seen will be amniotic fluid, followed by visible tissue and blood. Gentle 'jiggling' of the tip in the middle of the uterus helps to clear the cannula apertures of tissue. The appearance of 'red foam' in the cannula is frequently accompanied by firm uterine contractions 'grasping' the tip of the cannula, and indicates that evacuation is complete. If the aspirated material approximates the expected amount, the cannula should then be removed from the cervix

Following all types of vacuum aspiration, a brief exploratory curettage to test if the uterine cavity is empty is often carried out. It is essential to avoid retaining products of conception, and the operator must judge the completeness of the operation (*a*) by the 'feel' of the uterine wall during the aspiration (this is particularly valuable in the case of the plastic cannula), (*b*) by determining the size of the uterus following aspiration through manual examination and sounding the uterine depth, and (*c*) by a scrupulous examination of the products of conception to be certain that the nature and volume of the material obtained is consistent with the gestational age. This is best done by placing the material in a glass container. If this is done, and a proper estimate made, there is no need for pathological examination.

A gauze bag in the collecting bottle greatly helps recovery and identification of material. It also allows the doctor to dispose of the products of conception and avoid transferring this minor but onerous responsibility on to his assistants. It is important to exclude the possibility of a molar pregnancy, which would require careful follow-up of the patient. Ectopic pregnancy occurs in approximately one in 300 of all pregnancies, and may not be diagnosed before an attempt to perform a termination. An ectopic pregnancy should be suspected if no villi are seen, because only decidual material will be removed from the uterine cavity.

*Vacuum aspiration and curettage compared*

The relative advantages of the two techniques, both of which are recommended only until 10 or 12 weeks, are as follows:

| *Vacuum aspiration* | *Curettage* |
|---|---|
| Less bleeding | Low initial cost |
| Fewer perforations* | No maintenance costs |
| Quicker | Most gynaecologists are already familiar with technique |
| More likely to remove all products of conception | |
| Aesthetically acceptable to theatre and nursing staff | |
| More amenable to outpatient use | |

OUTPATIENT ABORTION

A combination of vaginal termination and a local anaesthetic (or no anaesthetic at all) presents the simplest and safest method of induced abortion and is eminently suitable for use as an outpatient procedure. The advantages of this procedure are that the risks of general anaesthesia are eliminated, a second highly trained person to give a general anaesthetic is not required, and the waiting time between the decision to operate and the termination of pregnancy can be virtually eliminated.

When the operation is done as an inpatient technique, the patients have to be booked according to the availability of beds and it is inevitable that a waiting list will arise. Delay in terminating a pregnancy is associated with increasing danger, and the administrative flexibility of an outpatient procedure is one of its most important advantages, both to the surgeon and the patient. If the woman is well counselled before and during the course of the procedure, it is possible to use the experience of termination of pregnancy under these circumstances as an opportunity for growth of the woman's understanding of and her ability to deal with the problem of the control of her own fertility.

The opportunity for the doctor to delegate responsibility for the discussion of contraception, sterilization, and the detailed description of the experience of vacuum aspiration under local anaesthesia to a well-chosen and carefully-trained paraprofessional 'abortion counsellor' is of the utmost importance.

Accumulated experience has shown that the complications of termination either occur at the time of operation or are secondary ones, such as secondary infection and haemorrhage arising some days later. Nothing is to be gained from the point of view of care of the patient by keeping her in bed for the night after the operation. Most outpatient abortion clinics admit women one or two hours before the procedure and keep them for one to four hours afterwards. It is essential that any outpatient clinic has a planned procedure for dealing with rare

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*Perforations reported in termination of pregnancy up to 12 weeks, 1965–70 (B. Beric and M. Kupresanin, Yugoslavia: *Lancet*, 1971, 2, 619):

| | *Number of operations* | *Perforations* | % | *Rate* |
|---|---|---|---|---|
| Curettage | 14,261 | 18 | 0·12 | 1:791 |
| Vacuum aspiration | 22,909 | 13 | 0·04 | 1:1,762 |
| Total | 37,170 | 31 | 0·08 | 1:1,200 |

complications that may arise, and for ensuring that the woman can be quickly transferred to a properly staffed hospital. The procedure is only responsible if it is limited to pregnancies of less than 12 weeks in women without any significant medical or gynaecological problems.

Before the patient leaves the clinic the amount of bleeding should be determined. The blood-pressure, pulse and temperature should be recorded, since shock and tachycardia are the most common early signs of intra-abdominal haemorrhage after perforation. Repeated advice about future contraceptive practice is appropriate when she is leaving and the woman should be clearly and simply instructed concerning the availability of contraceptive after-care. Careful instructions (printed and/or verbal) must be given (and be clearly understood by the patient) concerning possible future events, such as bleeding, cramps and fever.

#### INPATIENT CARE AND DISCHARGE

In the rare cases when general anaesthesia is given, it is necessary to admit the patient either the night before termination, or six to eight hours before the operation takes place, in order to be certain that she does not take any food before the anaesthetic.

## High-risk pregnancies

Pregnancies in women in the first trimester of pregnancy who have medical complications (renal, cardiac or other serious disease) should be terminated by vacuum aspiration or dilatation and curettage, but the operation must be performed in an institution which has adequate facilities for the complete medical care of such a patient and should not be carried out at a peripheral unit.

Several technical options are available for terminating pregnancy after the 12th week, but all have serious disadvantages, converting the case to one of higher risk.

#### INTRA-AMNIOTIC INSTILLATIONS

An intra-amniotic instillation of hypertonic saline usually leads to a spontaneous abortion within 12 to 36 hours of administration, perhaps causing fetal death *in utero* by interfering with placental function Its greatest disadvantage is the patient's conscious experience of 'immature labour' while expelling the products of conception. It also has the disadvantage that the passage of the products of conception is not always complete, and curettage may be necessary for retained products of conception in about 25–30% of cases.

Saline instillation involves certain other hazards. The material which is injected may be passed by error into the maternal vascular system or into the abdominal cavity. This has resulted in death from cardiac failure, cerebral oedema or renal shutdown—possibly owing to rapid electrolyte changes. The method is contraindicated in any woman with cardiac or renal disease because of changes in serum volume and osmolality which may take place. Both saline and glucose involve a risk of infection, but this is very much greater with glucose. Recently, urea has been tested as a successful alternative to saline or glucose.

It is possible to perform the amniocentesis by the vaginal route, but an abdominal approach is recommended, and the earliest time when the procedure can be performed safely is the 16th week. It is very important that a general anaesthetic is *not* used, so that early symptoms of peritoneal or intravascular infusion can be detected.

A trocar and cannula or a medium needle is passed through the abdominal wall, and up to 200 ml of a 20% saline solution are instilled by drip. The infusion should be a slow one, and a system of two-way taps is useful. Some operators pass a polyethylene cannula into the amniotic sac. The procedure should be stopped if blood and not amniotic fluid is obtained.

#### HYSTEROTOMY

The surgical procedure of a classical caesarean section is followed, but if the pregnancy is advanced (over 16 weeks), a low transverse incision should be made. Some experienced surgeons use a vaginal approach if the uterine supports are sufficiently lax to allow the cervix to be brought near the introitus. This route may be useful for certain obese patients, but, overall, it rarely has advantages over the abdominal approach, and the disadvantages of poor access make it more difficult to deal with complications such as haemorrhage.

If hysterotomy is performed in a situation where subsequent pregnancy is desired, the patient should be told to have future deliveries in hospital.

### Termination and sterilization

Even though it may be eminently sensible to combine tubal ligation and termination, female sterilization complicates termination of pregnancy, usually requires several days of inpatient care, and under certain circumstances may increase the risk to the woman. A spinal or general anaesthetic is needed, and greater surgical skill is demanded. Up to eight weeks, tubal ligation by the vaginal route can be performed in the usual way and the experienced gynaecological surgeon may be able to use this approach up to 10 weeks. After this time a laparotomy or laparoscopy is required.

It should be remembered that during pregnancy the pelvic tissues are more vascular and more friable, and the potential for brisk haemorrhage is somewhat greater. Countering this is the ease of dissection because of the oedematous tissue planes of pregnancy. Sterilization by the use of a laparoscope has been carried out in combination with termination of pregnancy, and progress is being made in developing transcervical sterilization techniques. Recognizing present difficulties, but looking forward to the availability of new and simpler methods, it is recommended that newly established centres for termination of pregnancy should consider the inclusion of both *male* and *female* sterilization in their clinics from their inception.

However, firm statistical data are not yet available to determine the best choice among the possible options open once a decision to sterilize the patient has been taken. It is not possible to say whether the risks to the woman are reduced if the operations of termination and sterilization are performed sequentially instead of at the same time, but the hazards of two separate anaesthetics

would have to be taken into account Such a double procedure may not be acceptable to the harassed woman, and most women would not be happy to return or to wait for a second operation. Equally, at the present time it is not possible to measure the exact risk of tubal ligation performed at the time of a curettage or vacuum aspiration, but it does seem that people will give this combined procedure greater consideration in the future for pregnancies under 12 weeks. It seems likely that hysterotomies should be avoided in pregnancies of less than 12 weeks, and used with caution afterwards. No really firm recommendations can be made until further studies have been carried out.

## Mortality

The mortality of legal abortion shows a wide geographical variation (Table I). A low mortality is likely where operations are performed with the minimum of delay and with the great majority taking place before 12 weeks. Such a situation is enforced by law in many eastern European countries, but can also arise with

TABLE I. MORTALITY FOLLOWING LEGAL ABORTION

| *Country* | *Year(s)* | *Death rate per 100,000 operations* | *Absolute numbers* | |
|---|---|---|---|---|
| | | | *Legal abortions registered* | *Deaths reported* |
| Sweden | 1946–48 | 257 | 10,500 | 27 |
| | 1960–66 | 39 | 30,600 | 12 |
| England and Wales | 1969 | 31 | 54;819 | 17 |
| New York City | 1970–71* | 11·3 | 123,832 | 14 |
| Japan | 1959–65 | 4·1 | 6,860,000 | 278 |
| Hungary | 1964–67 | 1·2 | 739,000 | 9 |
| Yugoslavia | 1963–67 | 1 1 | 894,012 | 10 |

*Based on 8 months' experience

the experience of the community and the medical profession, as in Japan. The higher mortality rates found in England, Sweden and Wales are partly associated with the fact that many operations are still done after 12 weeks. The mortality of the operation also declines as surgical and administrative experience increases. There has been a halving of the mortality rate in Scandinavia since the 1950s. Most of the deaths which occurred in New York since the repeal of the law in 1970 took place in the early months of this new experience.

Mortality statistics in some countries are biased by the fact that women with serious medical illnesses have for a long time been accepted as candidates for hospital abortions However, the nature of their illness has often increased the risk of termination. It is also notable that where mortality rates are low, as in Eastern Europe, a significant proportion of the few deaths that do occur takes place among women with complicating medical or surgical conditions.

## Side-effects

### MORBIDITY

The long-term complications of legally induced abortion can be listed, but they have not been measured with great accuracy in any situation. The long-term follow-up of more than 1,000 patients in Sweden over one to five years showed a

very low incidence (1·6%) of abnormalities of the uterine tubes, and these in some cases could be ascribed to preceding disease and not to the interruption of pregnancy. Five women in the series complained of involuntary infertility, and in one case only this was thought to be the consequence of the legal abortion. Case-control retrospective studies in Japan show that an interruption of pregnancy has no significantly greater risk of leading to infertility than a full-term delivery. Similar studies in Japan show that ectopic pregnancies are not related to a previous history of abortion, with the exception of implantation in the ampulla.

Premature delivery does appear to be correlated with legal abortion in some countries. In Hungary there has been a rise in the incidence of prematurity since abortion became legally available, but fortunately there has been no parallel rise in the infant mortality rate in that country. In view of the reduced incidence of immediate complications which can be demonstrated with vacuum aspiration and local anaesthesia, it seems reasonable to infer that long-term side-effects may be subject to a similar reduction in the future.

The immediate non-lethal risks of abortion are perforation of the uterus, laceration of the cervix and haemorrhage. The risks of complications rise rapidly with increasing duration of gestation (Fig. 5).

#### EMOTIONAL EFFECTS

Much study has been devoted to the emotional consequences of termination of pregnancy, and a wide variety of adverse reactions has been quoted. It is now being appreciated that the attitude of the observers is critically important: if the professional personnel caring for the woman adopt a punitive attitude, she is likely to feel some degree of guilt afterwards. If they adopt a sympathetic attitude, she is likely to come through the experience with no long-term emotional scars. The findings of the long-term follow-up of women will probably be influenced by the design of the study itself. The stage when the pregnancy is terminated will have an influence on adverse emotional reactions just as it does on the physical risks.

No attempt has been made to measure the degree of emotional relief found in many women following the termination of an unwanted pregnancy.

## Counselling

In addition to providing the patient with both a contraceptive service and the necessary explanation of the abortion procedure and its possible side-effects, the opportunity for sympathetic discussion of the problems surrounding the choice of abortion provides needed emotional support.

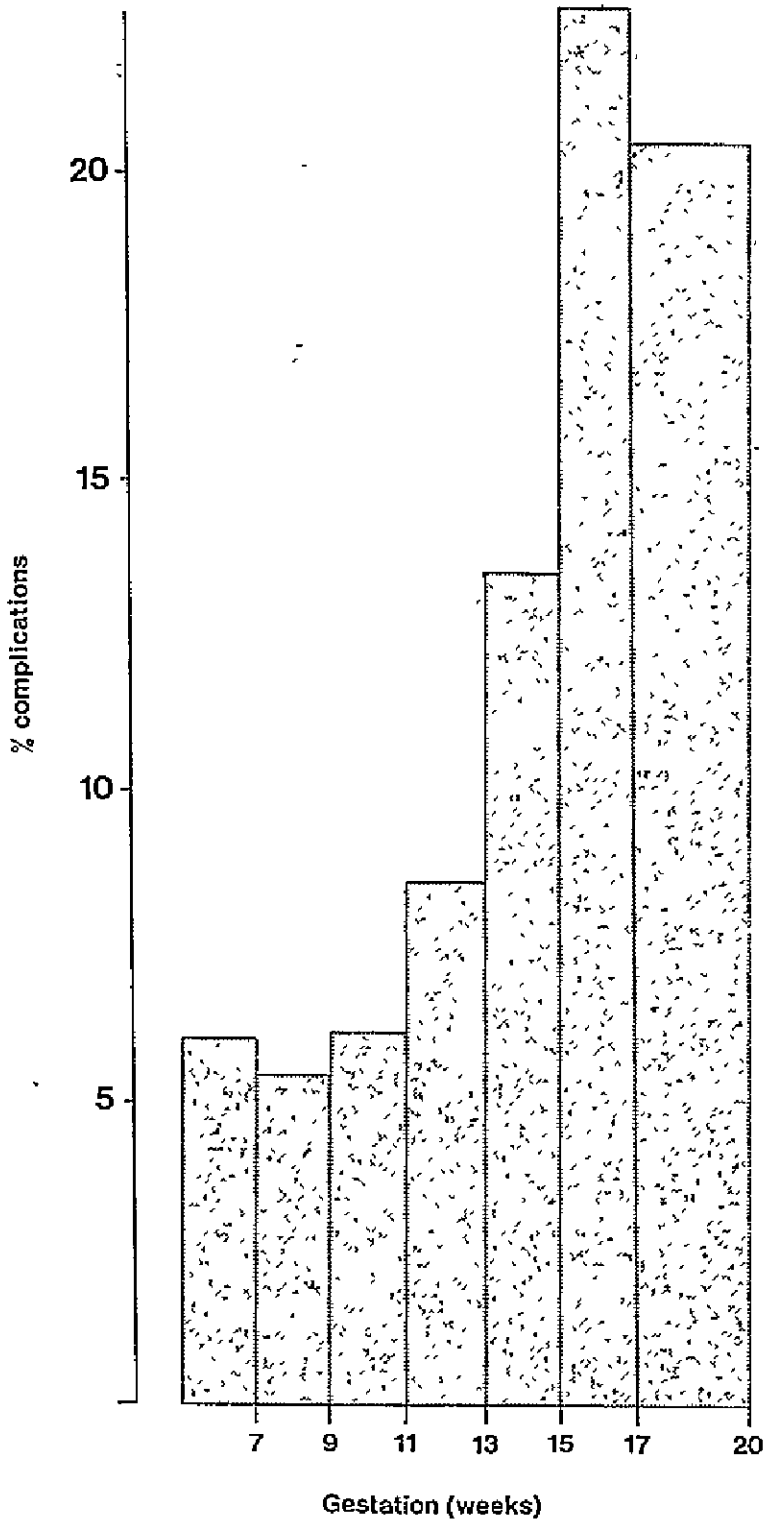


*Fig. 5.* Total reported complication rate among 18,484 legal terminations of pregnancy carried out between six and 19 weeks.*

*Adapted from the Joint Project for the Study of Abortion in the USA. The data exclude women with pre-existing complications and/or those sterilized at the time of the abortion.

## ADMINISTRATION

Termination of pregnancy, especially in the first trimester, is a predictable, repetitive procedure which is likely to be performed relatively frequently. Therefore, it is both possible and necessary to design efficient administrative procedures for handling relatively large numbers of patients. There is evidence that morbidity is lowest and efficiency greatest in those clinics in which the procedure is carried out most frequently. The ability to maintain an expeditious and comfortable flow of patients is also extremely necessary to avoid dangerous delays between the time of deciding to perform the termination and the time of carrying it out. These goals are made easier by establishing clinics allowing outpatient termination.

Any system of administering abortion services may become overloaded under certain circumstances, one example of which is during the development stage. When the available resources are temporarily limited, then pregnancies of late duration may be refused, while the earlier pregnancies continue to be accepted. As noted, such a practice is in the interests of the patient as well as of good administration. This temporary recommendation is in the interest of doing the greater good for the greater number, and will, in the long run, act as a powerful educational force which will convince those at risk to seek help early rather than to put it off.

At the two ends of the central administrative spectrum will be (*a*) the high-volume situation (with 10 or more terminations a day), and (*b*) the need to perform a lesser number of terminations within the context of a comprehensive family planning service (a few times a week to once a month). A well-organized outpatient clinic, with the services of a few specialists but many well-trained paraprofessionals, may properly cope with 100 or more early terminations each week.

### High-volume situation

A heavy load of patients is likely to arise in an urbanized area which, of its nature, will have good hospital facilities including specialized gynaecological services These may already be accustomed to dealing with complications of illegal abortion. It is the experience of those countries with reformed abortion laws that, in a high-load situation, the daily distribution of patients can be made fairly constant. A sustained daily coverage is also administratively more efficient than large fluctuations.

The terminations may be performed in the hospital operating theatres or in outpatient clinics. If in operating theatres, they could be performed after major operations, towards the end of the operating schedule. There may have to be some substitution of staff and perhaps additional help for wheeling a number of

patients in and out of the theatre expeditiously. The additional load could be carried by the existing facilities, but the best quality of service can be given if additional outpatient clinic facilities are provided and no extra demand is made on the main operating theatre of the institution.

The setting up of separate facilities ultimately reduces overhead costs and, therefore, the cost of the programme, and creates a situation which is less likely to give rise to conflicts with other users of existing facilities. Additional treatment rooms to deal with first trimester terminations could be made available for a moderate investment. A simple table with stirrups and a clean room of moderate size with a washable floor and walls is necessary. Adequate lighting from behind the operator is desirable, but a theatre light is not a necessity. Such auxiliary treatment rooms could share central autoclave facilities and should have access to a surgical theatre if operative complications arise. If general anaesthesia is used, a recovery room attended by a nurse would be useful in a high-load situation.

In most high-load circumstances, as with other repetitive procedures, it adds to efficiency for one operator to use two to four treatment rooms or tables, thereby cutting down delays between cases.

Relatively minor changes in routine can save considerable time in a heavy-load situation, and continuous attention should be paid to detail. For example, for a patient to roll off the table onto her face on a transfer litter or cart may be more efficient than transferring her in the supine position, as well as obviating the risk of inhalation of gastric contents in the case of vomiting.

A doctor can cope with 10 early terminations in two to three hours. The most acceptable way of dividing the load between doctors is probably for a team of surgeons to be available, one of whom could perform abortions, say, once a week, or perhaps every morning during one month in the year.

It is obvious that an efficient outpatient service can meet possible demand in a much less costly way than inpatient termination of pregnancy. Savings may be as much as 75%. Evidence is accumulating, especially in the USA, that outpatient abortion, with or without anaesthesia, does not increase morbidity or mortality.

In an institutional setting where numerous terminations are handled, certain patterns of demand are predictable. Facilities for skilled nursing care will be required for two categories of patient. First, an occasional patient, probably less than one in a hundred, will require inpatient treatment as a result of a small number of predictable postoperative complications. Most of these may need only a period of observation, but some will require transfer to a regular gynaecological ward. Secondly, a number of women will have a sterilization procedure performed at the time of the termination. In some hospitals in the USA and Britain, the proportion desiring sterilization rises to greater than half of all terminations. The remainder of the women will only need a period of surveillance, lasting some hours, after the operation.

It should be emphasized that the percentage of women desiring sterilization is administratively a much more significant variable than the likely complication rate in creating a demand for the provision of beds and skilled nursing care.

### Low-volume situation

The need for termination of pregnancy at relatively infrequent intervals is most likely to arise in a rural setting. However, places such as primary health centres may be extremely busy because they are likely to serve large areas. If simple medical facilities are to be used in a safe and responsible way, it is imperative that only low-risk cases be accepted in the low-volume situation. Abortions should be undertaken only by those who have been specifically trained to perform them properly. There should be considerable caution about combining sterilization with termination in a low-volume situation, and laparotomies should not be performed.

When terminations are done in a low-volume situation, there should be clearly established liaison with an institution dealing with a heavy load of terminations in order that smooth and rapid referral for female sterilization can be carried out, although, of course, vasectomy may be substituted for tubal ligation in suitable couples at smaller centres. It is possible to run a low-volume centre that is geographically remote from institutional standards of care, but the details of the type and availability of transport must be thought out in advance of the rare situation when emergency transfer may be necessary.

The disadvantages of the low-volume situation are the obvious ones of remoteness from facilities and lack of highly specialized medical care in the event of complications. Careful selection of low-risk cases can satisfactorily counteract these disadvantages. The advantages are that many functioning low-volume units will greatly enlarge the potential number of terminations which may be undertaken in the country as a whole.

The low-volume situation also allows termination to be appropriately integrated with other family planning services. For example, a pregnancy which occurs with an intrauterine device *in situ* (if it meets the requirements of the law) could be dealt with by the family planning service which inserted the intrauterine device. Conversely, the woman aborted in a low-volume unit will be able to get long-term family planning advice from those who took care of her at the time of termination. The closeness of this relationship is more likely to lead to sustained contraceptive use than if the woman were to travel to a more distant place to be terminated.

## CONTRACEPTIVE ADVICE AFTER TERMINATION

The woman who has an abortion has proved both that she is fertile and that she finds it difficult to control her fertility. It is essential that she does not leave the doctor's care without a clear understanding of what methods of contraception should be used by the couple in the future.

The place of female sterilization has been discussed in this booklet already. The option of vasectomy for the partner should never be forgotten. Oral contraceptives can be given following termination, counting the day of the operation as day one of the cycle, and starting tablets on day five. IUDs can be inserted at the time of operation and this technique has been especially widely used and evaluated in Yugoslavia and parts of the USA. Other reversible methods of contraception can be advised as appropriate.

Careful, double-blind prospective studies from Chile have shown that IUDs can also be inserted at the time of treatment of *incomplete* abortion and that their use is not associated with any increased risk of infection. Women given an IUD at this time have higher continuation rates than those having them inserted postpartum or intramenstrually.

### IPPF resolution

At its meeting in October 1971, the Governing Body of the IPPF unanimously passed the following resolution dealing with the relationship between contraception and abortion:

'Recognizing that

(*a*) contraception is the first line of defence against unwanted pregnancy;
(*b*) in those countries in which abortion is illegal, legislation which punishes a woman who has had an abortion may deter her from seeking medical advice if she is ill after such an operation and may inhibit her from obtaining immediate contraceptive advice;
(*c*) the majority of incomplete abortions and other complications are the result of illegal abortions;

'The Governing Body

(*i*) Resolves that it is desirable that contraceptive advice should be readily available to a woman immediately after an abortion;
(*ii*) Encourages member associations in those countries in which abortion is legal to seek to maximize the provision of contraceptive services immediately after an abortion;
(*iii*) Urges associations in those countries in which abortion is illegal, to seek, where appropriate, to bring their influence to bear towards ensuring that adequate and socially humane services are available to treat incomplete abortions and other complications and that such services be linked with the provision of contraceptive advice.'

## BIBLIOGRAPHY


Beric, B. M. & Kupresanin, M. (1971) Vacuum aspiration, using paracervical block, for legal abortion as an outpatient procedure up to the 12th week of pregnancy. *Lancet*, 2, 619–620.

Callahan, D. (1970) *Abortion Law, Choice and Morality*. London: Macmillan.

David, H. P. (1970) *Family Planning and Abortion in the Socialist Countries of Central and Eastern Europe*. New York: Population Council.

Diggory, P. (1969) Some experiences of therapeutic abortion. *Lancet*, 1, 873–875.

Hall, E. ed. (1970) *Abortion in a Changing World*. Vols. 1 & 2. New York & London: Columbia University Press.

Kerslake D. & Casey, D. (1967) Abortion induced by means of uterine aspiration. *Obstetrics and Gynecology*, 30, 35–45.

Lewis, S. C. (1971) Vacuum termination of pregnancy. *British Medical Journal*, 4, 365.

Pakter, J. & Nelson, F. (1971) Abortion in New York City: the first nine months. *Family Planning Perspectives*, 3, No. 3, 4–12.

Penfield, A. J. (1971) Abortion under paracervical block. *New York State Journal of Medicine*, 71, 1185–1189.

Potts, D. M. (1970) Post-conceptive control of fertility. *International Journal of Gynecology and Obstetrics*, 8, 957–970.

Potts, D. M. (1970) Termination of pregnancy. *British Medical Bulletin*, 26, 65–71.

Ramwell, R. & Shaw, J. E. eds. (1971) Prostaglandins. *Annals of the New York Academy of Sciences*, 180, 1–568.

Soonawala, R. (1971) Simple technique of uterine evacuation. *Lancet*, 2, 640–641.

Strausz, I. K. & Schulman, H. (1971) 500 outpatient abortions performed under local anesthesia. *Obstetrics and Gynecology*, 38, 199–205.

Tietze, C. (1970) Abortion laws and aborton practices in Europe. In *Advances in Planned Parenthood*, ed. Sobrero, A. J. & McKee, C. Vol. 5, pp. 194–212. Amsterdam: Excerpta Medica Foundation.

Tietze, C. (1971) Early complications of abortions under medical auspices: a preliminary report. *Studies in Family Planning*, 2, 137–143.

World Health Organization (1971) *Abortion Laws: a Survey of Current World Legislation*. Geneva: WHO.

World Health Organization (1970) *Spontaneous and Induced Abortion*. Report of a WHO Scientific Group. Pp. 51. Geneva: WHO. (Technical report series No. 461.)

## OTHER IPPF MEDICAL PUBLICATIONS

*IPPF Medical Bulletin.* Published six times a year, giving information and views on recent developments in family planning, including its impact on community health. Sent free to doctors throughout the world.

*IPPF Medical Handbook.* First published in 1962, second edition 1964, third edition 1968. Pp. 112. Price $2.50 (USA) or £1·00.

*Intrauterine Contraception.* First published in 1966, second edition 1968, third edition 1972. Pp. 39. Price $1.00 (USA) or 40p.

*Vasectomy.* Will be published early in 1972.

*Systemic Contraception.* Will be published in 1972.

*Comments on Steroidal Contraception.* A report of the meeting of the IPPF Central Medical Committee and its advisers held in New York on 11 and 12 April 1970 to discuss the known and postulated side-effects of steroidal contraception. Published in 1970. Pp. 55. Price $1.00 (USA) or 40p.

*Cervical and Vaginal Cytology: Simplified Smear Technique.* Published in 1971. Pp. 30. Price $0.75 (USA) or 30p.

*Directory of Contraceptives.* First published in 1967. Fully revised trilingual edition (English, French & Spanish) published in 1971. Pp. 83. Price $1.50 (USA) or 60p.

*Contraceptive Testing Manual.* Will be published in 1972.

*Family Planning for Midwives and Nurses.* Published in 1971. Pp. 56. Price $1.25 (USA) or 50p.